



DIGITAL TRANSFORMS PHYSICAL

# Augmented Reality Car Repair:

## How Can You Improve Automotive Service Efficiency?



**PART LOCATED**

TAKE ME THERE

START SERVICE TASK





## Introduction

Customer expectations and competitive pressures hold service technicians to high standards for quality and efficiency. But in an industry defined by fast-paced innovation and increasingly complex products and processes, traditional 2D work instructions are failing your technicians.

# What's the Current State of the Automotive Manufacturing Industry?

The job of an [automotive original equipment manufacturer \(OEM\)](#) doesn't stop when a car leaves the factory. Ensuring customers are satisfied after purchase is critical, and providing exceptional service is key. As your experts retire, they take years of experience and hard-earned knowledge with them—leaving newer hires with limited training and upskilling resources. And for automotive OEMs, these skills gap issues are exacerbated by a unique set of challenges.

## Automotive OEM Workforce Challenges

**66%** of technicians say their decision to work at a shop is affected by whether it has an onboarding process

**40%** of technicians say diagnostic tools—or the lack of diagnostic tools—create the majority of issues in the shop

**41%** of technicians leave the industry in their first two years

Source: [2022 Technician & Mechanic Statistics & Infographic: Recruiting, Training, Job Satisfaction, & More \(WrenchWay\)](#)

While automotive dealerships see high turnover in service and parts departments, fewer technicians are available for service, which means dealerships need to invest more time in training new hires. Computer integrations, autonomous driving, and other technological advancements have completely transformed vehicle complexity over the last 20 years. But for some automotive OEMs, technician tools and instructions haven't kept pace with this digital transformation.

## What Are the Disadvantages of 2D Work Instructions?

Evolving customer preferences and competitors put pressure on your organization to innovate and adapt. But paper-based instructions lack context into the intricacies of complex vehicles, slowing down service for both new and experienced technicians. These traditional materials can also be quickly outdated or easily misplaced, making your business vulnerable to inefficiencies and quality issues. Meanwhile, long wait times degrade customer satisfaction—and potentially your net promoter score.


## What Are the Advantages of Augmented Reality in Car Repair and Service Instructions?

Automotive OEMs are using augmented reality (AR) to transform work instructions, upskill their workforce, get ahead of the competition, and improve customer satisfaction. [Vuforia](#), [PTC's enterprise AR platform](#), solves three key service efficiency challenges in automotive manufacturing:

1. Long Service Times Increase Costs
2. Complex Instructions Complicate Service
3. Long Wait Times Reduce Customer Satisfaction


## How Is AR Transforming Automotive Service Efficiency?

### Challenge #1: Long Service Times Increase Costs



Before a technician can even begin servicing the vehicle, they need to diagnose the issue and locate the part—which is a difficult task as cars become more complex. 2D diagrams can't capture the scale, detail, and context needed to service a complicated vehicle or other heavy machinery. For example, traditional instructions most likely can't help your technician locate complex wire harnesses through kilometers-long stretches of cables and actuators. When your technicians lack the visual tools they need to find a part quickly, that unproductive search time adds up—and so do your service costs.

### Solution: 3D X-Ray Visualization Reduces Part Search Time



Vuforia transforms instructions into 3D X-ray visualization, which displays detailed, accurate 3D content on the physical car to show the inner components at scale. So instead of wasting valuable time searching the vehicle while juggling a cumbersome manual, technicians can quickly and easily locate the part through AR guidance so they can begin service right away. With 3D X-ray visualization, technicians are empowered to improve service efficiency, reducing costs and customer wait times.



### Challenge #2: Complex Instructions Complicate Service

Once the technician has located a specific part, they can finally begin the repair or maintenance, but unfortunately 2D instructions are no more helpful during service than they are during part localization. Using complex 2D information from a paper manual to service a 3D object (i.e., a physical car) can be a difficult undertaking. And because SMEs can't always be available to guide inexperienced technicians, these unclear training and upskilling resources make your business vulnerable to costly time waste, human error, and reduced first-time fix rates (FTFR).



### Solution: Visual Step-by-Step Guidance Simplifies Complex 2D Work Instructions

Service for complex vehicles significantly benefits from 3D instructions with AR. These experiences provide clear, in-context, visual content that guides less familiar technicians through repairs and maintenance—without requiring seasoned experts to step away from their own work to assist. AR experiences are also valuable for experienced technicians when faced with repairing a brand-new vehicle that they haven't worked on before. By equipping technicians with a step-by-step workflow that resembles a checklist, Vuforia improves both efficiency and accuracy, limiting errors and boosting FTFR.

*Automotive OEMs can also connect service instructions to existing systems and architecture to create a [digital thread](#) of rich data. This makes it easier to author new instructions, store them in one place, and track success metrics and performance.*



### Challenge #3: Long Wait Times Reduce Customer Satisfaction

When your technicians lack the tools that improve automotive service efficiency and accuracy, it can have a negative impact on costs, productivity, and your customer relationships. Unproductive searches and overcomplicated service result in increased wait times for your customers. In the long term, these shortcomings can significantly impact customer trust and overall customer satisfaction.



### Solution: Repurposing Data into 3D Guides Improves Customer Satisfaction

With Vuforia's 3D X-ray visualization and visual step-by-step guidance, your technicians are equipped with dynamic AR experiences that help drive efficiency, increase FTFR, and improve the quality of repairs. The benefits of this solution boost customer trust, satisfaction, and retention over time. In the long term, these powerful new tools will boost your reputation for customer satisfaction and your net promoter score.

## How Can You Put AR in Action for Automotive Service and Repair?

### PTC's Vuforia Studio: How Will It Help?

PTC's Vuforia Studio can combine existing CAD, IoT, and PLM data for AR car repair experiences that transform automotive service quality and drive workforce efficiency through:

- Clear, in-context 3D instructions
- Scalable content that can easily be shared across the enterprise
- Digital thread connections that speed up the authoring process

## Learn More

Automotive OEMs are using best-in-class AR car repair solutions to reduce the complexity of maintenance and service—and the time to administer that service. Learn how Vuforia Studio can help your organization minimize service costs, reduce errors, and improve customer satisfaction.

[Explore Vuforia Studio](#)



DIGITAL TRANSFORMS PHYSICAL

#21243

PTC, Inc.

January 2023

Copyright © PTC Inc.

www.ptc.com